

CLAIMS

What is claimed is:

1. A heat exchanger, comprising:
 - a tube bottom made of pressure-resistant and temperature-resistant plastic;
 - and
 - a plurality of tubes disposed in side-by-side relationship in the tube bottom and forming at least indirectly part of a distribution and/or collecting chamber, wherein the tubes have tube ends which are each provided with a circumferential securing member to inhibit extraction of the tubes from the tube bottom by anchoring the tube ends with the securing member in the tube bottom through a casting process or injection process.
2. The heat exchanger of claim 1, wherein the tube bottom is made of a plastic selected from the group consisting of PU (polyurethane), PP (polypropylene), synthetic resin, epoxy resin, and cross-linked PU.
3. The heat exchanger of claim 1, wherein the tubes are made of metal selected from the group consisting of steel, vanadium, copper, and brass.
4. The heat exchanger of claim 1, wherein the tubes are made of plastic selected from the group consisting of polypropylene, polyurethane, and PEX (cross-linked polyethylene).

5. The heat exchanger of claim 1, wherein the tube bottom has a trough-shaped configuration and is provided with a circumferential flange, and further comprising a plurality of metallic threaded sleeves inserted in the flange through a casting process or injection process.
6. The heat exchanger of claim 1, wherein the tube bottom is provided with plural pipes, each of which having a flange.
7. The heat exchanger of claim 1, wherein the tube bottom is provided with reinforcements.
8. The heat exchanger of claim 7, wherein the reinforcements are made of a material selected from the group consisting of fiber glass, metallic wire, and carbon fiber.
9. The heat exchanger of claim 1, wherein the flange is provided with reinforcements.
10. The heat exchanger of claim 9, wherein the reinforcements are made of a material selected from the group consisting of fiber glass, metallic wire, and carbon fiber.

11. The heat exchanger of claim 1, wherein the securing member is implemented by embossments formed on the tube ends.
12. The heat exchanger of claim 1, wherein the securing member is implemented by funnel-shaped flared portions of the tube ends.
13. The heat exchanger of claim 1, wherein the securing member is implemented by rings attached circumferentially to the tube ends.
14. The heat exchanger of claim 1, wherein the securing member is implemented by surface roughening of the tube ends about their circumference.
15. A method of making a heat exchanger, comprising the steps of:
 - providing each tube end of a plurality of tubes with a securing member to inhibit extraction of the tubes from a tube bottom;
 - positioning the tubes in a vertical side-by-side relationship in a casting or injection mold; and
 - firmly anchoring the tube ends in the tube bottom through casting or injection molding with a pressure-resistant and temperature-resistant plastic.
16. The method of claim 15, and further comprising the step of incorporating reinforcements into the tube bottom.

17. The method of claim 15, wherein the plastic is selected from the group consisting of PU (polyurethane), PP (polypropylene), synthetic resin, epoxy resin, and cross-linked PU.
18. The method of claim 15, wherein the providing step includes formation of embossments on the tube ends.
19. The method of claim 15, wherein the providing step includes outwardly deflecting the tube ends in a funnel-shaped configuration.
20. The method of claim 15, wherein the providing step includes attaching rings circumferentially to the tube ends.
21. The method of claim 15, wherein the providing step includes surface roughening of the tube ends about their circumference.